SECTION V. STATE OF THE WATERSHED REPORT TULARE LAKE WATERSHED

Watershed Description

The Tulare Lake Watershed comprises the drainage area of the San Joaquin Valley south of the San Joaquin River. The Tulare Lake Watershed is essentially a closed basin since surface water drains north into the San Joaquin River only in years of extreme rainfall. The Watershed includes six groundwater basins: Kern County, Tulare Lake, Tule, Kaweah, Kings and Westside basins.

The Watershed is divided into six watershed management areas. Each area is defined as the designated groundwater basin including the surface waters that are tributary to each groundwater basin. Thus, the Kern County Basin Management Area includes the Kern River and the Poso Creek drainage areas, as well as the drainage areas of westside streams in Kern County. The Tulare Lake Basin Management Area consists of the historical lakebed. The Tule Basin Management Area includes the Tule River, Deer Creek, and White River drainage areas. The Kaweah Basin Management Area includes the Kaweah River and Yokohl Creek drainage areas. The Kings Basin Management Area includes the Kings River drainage area as well as the drainage area for the tributaries and distribution systems of the Kings River. The Westside Basin includes the drainage areas of westside streams in the Kings and Fresno counties.

Water Quality Assessment, Strategies and Current Activities

SURFACE WATER

Kings Basin Management Area

There are elevated bacteria levels in Pine Flat Reservoir. Phytoplankton biostimulants were measured in Sequoia Lake. The potential exists for high bacteria levels in Sequoia Lake. Unusual algal blooms have been identified in the Upper Kings River by Cedar Grove and unusual foaming has been observed at Ten Mile Creek, a tributary to the Kings River.

Strategy and Current Activities

A dissolved oxygen assessment on the Kings River is needed. The dissolved oxygen objective of 9.0 mg/l for the Kings River from Pine Flat Dam to Friant-Kern Canal may not be achievable due to natural conditions. Dissolved oxygen needs for the beneficial uses in this reach should be assessed. If necessary, dissolved oxygen objectives will be modified to fully protect beneficial uses.

Tulare Lake Basin Management Area

The Lower Kings River occasionally contains electrical conductivity and TDS higher than Basin Plan objectives. Problems were common during the critically dry years from 1987 to 1994. Molybdenum levels in the River are also high enough to impact agricultural beneficial uses. Fish from the river contain elevated levels of copper, arsenic, toxaphene, and Group A pesticides.

The Lower Kings River is on the Clean Water Act Section 303(d) list because of salt, pesticides, molybdenum, copper and arsenic. Total maximum daily load development is scheduled to start in 2003.

Strategies and Current Activities

As previously mentioned, the Kings River is on the Clean Water Act Section 303(d) list. Addressing problems in 303(d) listed water bodies is a high priority.

Salinity problems in the Lower Kings River (in the Tulare Lake Basin Management Area) need to be assessed. From 1987 to 1994, critically dry years, the Lower Kings River did not meet the Basin Plan objectives for pH and electrical conductivity, boron, chloride, molybdenum, and sulfate. The causes were due to a lack of fresh water and discharges of agricultural wastewater with high salinity and trace elements. After a few wet years, the conditions in the Lower Kings River improved and all water quality objectives are being met. Monitoring of the Lower Kings River and the major discharges continues to be conducted by the Kings River Conservation District. These results will continue to be reviewed and high electrical conductivity discharges will be characterized. Beneficial use impairments will be identified. If necessary, a plan to protect the quality of the Lower Kings River will be developed.

Additional work is needed in the Lower Kings River to survey beneficial uses of the river and develop objectives to protect all beneficial uses. Discharges that impact the uses will be identified. Stakeholder involvement will be solicited to develop potential mitigation measures to improve the quality of discharges or reduce the quantity of discharges to the River.

Kaweah Basin Management Area

Fish in Kaweah Lake are reported to contain elevated levels of copper, arsenic, and silver. Sedimentation has been noted in the lake. The potential exists for high bacteria levels in the river and the lake.

Tule Basin Management Area

Sedimentation has been noted in Lake Success. Also, the potential exists for high bacteria levels in the river and the lake.

Strategies and Current Activities

A beneficial use assessment needs to be conducted for the surface waters in the Tule Basin Management Area. The Basin Plan designated beneficial uses for all surface water in the Tulare Lake Basin, either individually, as in the case of the Kings River, or generally, as is the case with Eastside Streams. Individual water bodies are broken down into reaches and beneficial uses are identified for each reach. Some of these reaches are large with varied beneficial uses throughout them. General beneficial uses cover a large number of water bodies that vary greatly in character; some are rivers and some are small ephemeral streams. The beneficial uses of these water bodies may vary, but the designated beneficial uses do not reflect this variability.

Westside and Pleasant Valley Basin Management Area

High sedimentation and selenium loads originate from the Panoche Creek Watershed. San Carlos Creek has high levels of mercury that also cause high levels of mercury in Panoche Creek. The sources of the mercury are mines.

San Carlos Creek is on the Clean Water Act Section 303(d) list because of mercury. Panoche Creek is on the Clean Water Act Section 303(d) list because of sediment, selenium and mercury. Total maximum daily load development is scheduled to start in 2003.

Strategies and Current Activities

A program is needed to reduce sediment and selenium loads from the Panoche Creek Watershed in the Westside and Pleasant Valley Portions. During all rain events, large amounts of sediment and selenium are carried out of the Panoche Creek Watershed to westside soils. During rain events with greater than a five year return period, sediment and selenium are carried into the San Joaquin River and contribute to the river exceeding its water quality objectives. A coordinated resource management group has formed for the Panoche/Silver Creek Watershed to assess these problems and identify solutions. The Regional Board continues to work with this group to protect the surface and groundwaters affected by this watershed.

In the Arroyo Pasajero, large flood flows carry sediments out of the upper watershed. The water and sediments have affected the California Aqueduct. The Stewards of the Arroyo Pasajero CRMP formed to address this problem. The Regional Board continues to work with this group to protect surface and groundwaters affected by this watershed.

Studies are needed to develop a plan to control mercury discharges from mines to San Carlos Creek.

Kern County Basin Management Area

Some sedimentation problems are noted in Isabella Lake.

Monitoring

There has been no comprehensive monitoring and assessment program for surface waters implemented in the Basin. Baseline monitoring is needed to define long-term trends in water quality downstream from the major reservoirs. Additional work is needed to characterize water quality conditions in waters upstream of reservoirs. The problems observed on the Upper Kings River should be monitored to identify sources of algal blooms and foaming.

Fish Tissue Studies

Studies need to be conducted in Pine Flat Reservoir, Lake Success, Lake Kaweah, and Lake Isabella. Reservoirs tend to serve as sinks from contaminants and fish from many other reservoirs in the region have elevated levels of mercury and/or pesticides and PCBs.

Erosion

In addition to the sedimentation problems noted above, with each rainfall, some surface waters of the basin run brown implying that there is a large quantity of sediments in the water. No review of potential sediment sources has been done. Improperly graded subdivisions are believed to contribute large quantities of sediment as do eroding roads, grazing, and other activities. These sediments may be impairing the municipal, recreational, and habitat beneficial uses of affected waterbodies.

Strategies and Current Activities

The Basin Plan has erosion control guidelines that do not adequately protect the basin's waters. The guidelines must be reviewed and the deficiencies corrected. The sources of erosion must be targeted for application of management practices. Two sources which should be investigated immediately is grading in new subdivisions and road maintenance and construction activities.

GROUND WATER

Monitoring

There has been no comprehensive groundwater monitoring implemented in the Tulare Lake Basin. There will never be enough resources to conduct a watershed wide assessment. Staff has formed an advisory committee to focus on the Kings Groundwater Basin. The committee's goal is to conduct a demonstration project to identify key players, develop efficient monitoring protocols, and provide baseline information. However, due to the State Board withholding the Regional Board's allotment of groundwater monitoring funds, the committee has decided that resources are only available to develop a report identifying the parties that need to be involved, the protocols to identify suitable wells, the resources that would be needed, and the data storage requirements.

Nitrates

There are nearly 400 square miles of groundwater in the Basin with elevated nitrate levels. Water supplies are impacted in Delano, McFarland, Wasco-Shafter, Bakersfield, Maricopa, Taft, the Hanford-Lemoore area, the west side of Kettlemen City, the Fresno-Clovis metropolitan area, the area around Kingsburg, and the Reedley-Orange Cove area. Some control of nitrates has been achieved through the controlled use of septic systems in larger subdivisions and agriculture's efforts in recent years to apply fertilizer at agronomical rates. The principle sources of nitrates are believed to be from agricultural operations and from dairies.

Strategies and Current Activities

Irrigated agriculture and animal confinement facilities contribute nitrate loads to groundwater. The Regional Board maintains a baseline dairy regulatory program, which partially addresses this source of nitrates. There is no monitoring program to assess contributions of nitrates from dairies to groundwater. There is no program to address irrigated agricultural contributions. Nitrates from wastewater treatment facilities and sludge disposal are addressed in the Non-Chapter 15 Program.

A comprehensive monitoring program needs to be implemented to determine if current provisions adequately protect groundwater. A nutrient balance study is needed in the Tule Management Area. Effects of confined animal facilities can be evaluated from this basin portion. This would build on an ongoing nonpoint source project in the basin.

Salinity

The Basin is arid and closed. To become and continue as a highly productive agricultural area, vast quantities of supply water are imported. While the imported water is of excellent quality, its sheer magnitude equates to millions of tons of salt imported each year. Historically, large quantities of salts have come from oil field production. Regulation of these discharges has reduced the salt discharge. Evaporation basins collect and dispose of hundreds of thousands of pounds of salt each year. Evaporation basins are an interim solution to disposing of salts until determined environmentally benign. In addition, agriculturally based industries concentrate salts in their processes. Several industries (i.e. olive processors) and municipalities have created local plumes where salt concentrations have caused groundwater pollution. Fertilizers, soil amendments, and leachate from affected soils are additional sources of salt.

Elevated levels of salinity impact more than 1800 square miles of valley floor groundwater aquifers. Impacted areas include the valley floor in the western portion of Kern County, Kings County, Tulare County, and Fresno County.

Strategies and Current Activities

A basin-wide assessment is needed to determine if current provisions adequately protect the quality of water in the watershed. The Water Quality Control Plan for the Tulare Lake Basin specifies that groundwater monitoring should be undertaken to detect long-term trends and to identify problem areas for further study.

Selenium

Elevated levels of selenium affect more than 100 square miles of groundwater. Parts of the Kern County, Tulare Lake, and Westside basin areas have elevated selenium. The source of selenium is natural but agricultural practices compound the problems.

Shallow groundwater that is drained to allow agricultural production contains salts and selenium. This water is discharged to evaporation basins where the salt and selenium concentrate. Elevated selenium in some cases has caused avian problems.

Strategies and Current Activities

Since 1985, staff has collected samples at evaporation basins to assess trace element concentrations, including selenium. Avian studies conducted by the U.S. Fish and Wildlife Service documented avian impacts associated with elevated selenium levels at some evaporation basins. In 1993, the Board issued waste discharge requirements that required habitat to mitigate for selenium-induced impacts to wildlife. From 1997 to 1999, four requirements were updated incorporating U.S. Fish and Wildlife Service models that determine necessary habitat to mitigate for selenium induced impacts. Three operators are proceeding to address relevant CEQA issues as required by the State Board. Some evaporation basins have closed. Closed basins pose little threat of selenium exposure to wildlife. Annual sampling inspections of seven active operator's 10 evaporation basins will be conducted in each FY. Drainage Operation Plans, quarterly self-monitoring reports, annual self-monitoring reports from each of the seven active operators will be reviewed each FY. Staff conducts an annual meeting on monitoring to solicit input from trustee agencies. In summary, staff is working with seven active evaporation basin operators and six inactive operators. Resources are adequate to conduct the regulatory program. The program consists of updating existing permits, conducting inspections, taking enforcement actions, reviewing closure and environmental reports, and follow-up activities to the San Joaquin Valley Drainage Program.

Oilfields

Most oilfield wastewaters contain salts, oil and grease, and organics that present a threat to the beneficial uses of underlying good quality groundwater. Oil field wastewaters are considered either designated or non-designated wastes. There are more than 800 oilfield waste dischargers, of which 250 are regulated under waste discharge requirements. Many of these requirements are outdated. The program includes issuing permits for existing facilities, revising existing permits, conducting inspections, taking enforcement actions,

responding to appeals and addressing complaints. About 1.9 PYs of the Regional Board's Chapter 15 budget and 0.10 PYs of the Regional Board's Non-Chapter 15 budget is allocated to oilfields. Currently, there is a backlog of existing facilities which needs updated requirements. Resources are inadequate to permit and inspect all of the facilities, and complete enforcement actions.